DOCUMENT RESUME

ED 479 905 SP 041 696

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TITLE	The Role of Self-Regulated Learning in Contextual Teaching: Principals and Practices for Teacher Preparation.
SPONS AGENCY	Office of Educational Research and Improvement (ED), Washington, DC.
PUB DATE	2003-00-00
NOTE	24p.; A Commissioned Paper for the U.S. Department of Education project, "Preparing Teachers to Use Contextual Teaching and Learning Strategies to Improve Student Success in and beyond School." Project Director, Kenneth R. Howey.
CONTRACT	R305R70004
AVAILABLE FROM	For full text: http://www.ciera.org/library/archive/ 2001-04/0104prwn.pdf.
PUB TYPE	Reports - Descriptive (141)
EDRS PRICE	EDRS Price MF01/PC01 Plus Postage.
DESCRIPTORS	College School Cooperation; Elementary Secondary Education; Higher Education; *Independent Study; Learning Strategies; Metacognition; Partnerships in Education; Preservice Teacher Education; Self Evaluation (Individuals); Self Management; Student Motivation; Thinking Skills
IDENTIFIERS	*Self Regulated Learning; Self Regulation

ABSTRACT

This paper asserts that successful teachers must be reflective and analytical about their own beliefs and practices and acquire deep understanding of cognitive and motivational principles of learning and teaching. It examines how teachers can model and promote self-regulated learning for students. Self-regulated learning is characterized by awareness of thinking, use of strategies, and situated motivation. Teachers must experience, construct, and discuss these features in order to understand how to nurture the same development among students. This paper reviews 12 principles of self-regulated learning in four categories. Within each category, it discusses how teachers can analyze their learning styles, evaluate their own understanding, and model cognitive monitoring. Within the category of self-management, the paper examines how teachers can promote mastery goal orientations, time and resource management, and use "failure" constructively. It discusses how to teach self-regulation using direct instruction, metacognitive discussions, modeling, and self-assessment of progress. These principles are described as ways to help students gain a sense of their personal educational histories and shape their identities as successful participants in a community of learners. The paper highlights a successful partnership between a university, a community, and teachers that enacted these principles of self-regulated learning in authentic contexts of teaching and learning, noting issues confronting teacher education programs in implementing more demanding and contextualized instructional practices. (Contains 41 references.) (SM)

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ED 479 905

THE ROLE OF SELF-REGULATED LEARNING IN CONTEXTUAL TEACHING: PRINCIPLES AND PRACTICES FOR TEACHER PREPARATION[1]

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A Commissioned Paper for the U.S. Department of Education Project *Preparing Teachers to Use Contextual Teaching and Learning Strategies To Improve Student Success In and Beyond School*. Dr. Kenneth R. Howey, Project Director.[2]

ABSTRACT

As teachers are pressed to extend their craft to prepare more diverse students for the challenge of work and life beyond school, they are challenged to provide more authentic instructional contexts and activities than traditional knowledge-based curricula. In order to be successful, teachers must be reflective and analytical about their own beliefs and practices and they must acquire a deep understanding of cognitive and motivational principles of learning and teaching. Toward this end, we examine how teachers can model and promote self-regulated learning for their students. Self-regulated learning is characterized by three central features; awareness of thinking, use of strategies, and situated motivation. These features of independent learning need to experienced, constructed, and discussed among teachers so that they understand how to nurture the same development among students. Then the focus of instruction is shifted to fostering strategic and motivated students rather than delivering curricula or managing classroom behavior.

We review 12 principles of self-regulated learning, in four general categories, that can be used by teachers in the classroom. Within the category of self-appraisal, we discuss how teachers can analyze their own learning styles, evaluate their own understanding, and model cognitive monitoring. Within the category of self-management, we discuss how teachers can promote

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[1] A special thanks goes to Dr. Mary Nordhaus, who coordinates the Professional Development Schools, and to Sharon Olguin who coordinates the Career Development Program. These two outstanding teacher educators and their students provided some of the models, critical information, and thoughtful feedback used in this chapter.

[2] The work reported herein was supported in part under the Education Research and Development Centers Program PR/Award Number R305R70004, as administered by the Office of Educational Research and Improvement, U.S. Department of Education. However, the contents do not necessarily represent the positions or policies of the National Institute on Student Achievement, Curriculum, and Assessment or the National Institute on Early Childhood Development, or the U.S. Department of Education, and you should not assume endorsement by the Federal government.

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mastery goal orientations, time and resource management, and use "failure" constructively. We discuss how self-regulation can be taught with various tactics such as direct instruction, metacognitive discussions, modeling, and self-assessment of progress. The last several principles are discussed as ways to help students gain a sense of their personal educational histories and to shape their identities as successful students participating in a community of learners. In the final section of the chapter, we describe an example of a successful partnership between a university, a community, and teachers that enacted these principles of self-regulated learning in authentic contexts of teaching and learning. We note the promises and obstacles confronting teacher education programs in implementing more demanding and contextualized instructional practices.

THE ROLE OF SELF-REGULATED LEARNING IN CONTEXTUAL TEACHING: PRINCIPLES AND PRACTICES FOR TEACHER PREPARATION

The purpose of this set of commissioned papers is to explore ways that educators can strengthen the relevance and meaningfulness of what is taught and learned in schools. As Borko and Putnam (this volume) state in the first chapter, there is a great deal of concern that teachers and schools are failing to help children acquire the knowledge, skills, and dispositions that are crucial for life outside school and in the workplace. The challenge we face is how to make the learning in schools more authentic, more useful, and more contextualized for students so that they are equipped to solve problems that they confront in and beyond school. How can we connect schools to real life contexts or situations so that all students are successful once they leave the classroom? How can we provide students with the skills and motivation to be self-regulated and life-long learners?

The other chapters in this volume explore the notion of contextualized learning and teaching from various perspectives. Each chapter identifies specific strategies for linking schools to communities and the workplace that increase students' awareness about the application, rather than mere accumulation, of knowledge. Borko and Putnam provide a social-constructivist perspective on cognition that emphasizes the distributed and collaborative nature of learning. Wade focuses on the power of service learning for university students as a way of connecting schools to community needs. Lynch and Harnish examine ways to prepare teachers to use work-based learning to link their students to the world of work. Young argues eloquently for the importance of culturally relevant pedagogy so teachers are sensitive to students who have different backgrounds, lifestyles, and values. Darling-Hammond and Snyder focus on the importance of authentic assessment for contextualizing the meaningfulness of learning and promoting students' motivation. Pierce examines ways that teachers can use problem-based teaching to foster inquiry about issues that integrate the curriculum and apply students' knowledge.

Although each of the authors in this volume brings a different approach to the issue of making school more relevant to the outside world, there are some common threads among their views. From our perspective, it seems clear that teachers need to provide instruction across a more extended variety of contexts, incorporate a wider set of perspectives, and implement a more extensive set of instructional strategies than has traditionally been the case. In each of these new contexts, with each of these unfamiliar perspectives, and with each of these new strategies, teachers need to be much more thoughtful and reflective about their teaching and about their students. All of these chapters extend the notion of education beyond the acquisition of skills and information in their emphasis on learning in diverse contexts as necessary for subsequent application of knowledge.

We examine how teachers can help their students become more autonomous, strategic, and motivated in their learning so that they can apply their efforts and strategies in a variety of meaningful contexts beyond school. Our premise in this chapter is that teachers need to understand their own thinking to become more effective in nurturing the thinking of their

students. When new teachers have acquired an understanding of the social and situated nature of learning, an appreciation of the importance of authentic contexts, the habit of reflecting upon their own experiences, and the willingness to question their own assumptions and beliefs, then they will be more prepared to create the kinds of learning climates that will enable students to learn the lessons that really matter. This view is consistent with the recommendations of a special Committee on the Teaching of Educational Psychology, created by Division 15 of the American Psychological Association, who advocated that future teachers use a psychological perspective on learning to create a coherent framework of ideas about student learning (Anderson, Blumenfeld, Pintrich, Clark, Marx, & Peterson, 1995). They argued that deeper understanding of the cognitive, motivational, and situated characteristics of learning can help teachers design better instruction.

In this chapter we will examine the conceptual foundations of self-regulation and how it is related to learning strategies, metacognition, motivation, and related constructs of contextual teaching and learning. We will explore the benefits that accrue to teachers when they become more knowledgeable about metacognition and engage in effective self-regulation. Next we will identify and explain some principles of self-regulation that can guide teachers' decision-making. We will examine how these principles can be put into practice both in the preparation of teachers and in the instruction of students. Then, we will examine how one teacher preparation program attempts to help new teachers become more aware of their own learning and teaching. Next, we will consider the obstacles, both conceptual and organizational, that teachers confront as they try to become reflective, metacognitive, and self-regulative in their classrooms. Finally, we end with some suggestions and policies that can help new teachers become more thoughtful and effective in helping their students experience success in and beyond school.

What is Self-Regulation of Thinking and Learning?

The term self-regulated learning (SRL) became popular in the 1980's because it emphasized the emerging autonomy and responsibility of students to take charge of their own learning. As a general term, it subsumed research on cognitive strategies, metacognition, and motivation in one coherent construct that emphasized the interplay among these forces. It was regarded as a valuable term because it emphasized how the "self" was the agent in establishing learning goals and tactics and how each individual's perceptions of the self and task influenced the quality of learning that ensued. In the past ten years, a great deal of research has focused on a constructivist perspective on SRL (e.g., Paris & Byrnes, 1989), on social foundations of SRL (e.g., Pressley, 1995; Zimmerman, 1989), on developmental changes in SRL (e.g., Paris & Newman, 1990), and on instructional tactics for promoting SRL (e.g., Butler & Winne, 1995). The integrative nature of SRL stimulated researchers to study broader and more contextualized issues of teaching and learning while also showing the value of SRL as an educational objective at all grade levels. Interested readers can trace the history and various theoretical orientations to SRL in a volume by Schunk and Zimmerman (1989). What is important for teacher educators is that SRL can help describe the ways that people approach problems, apply strategies, monitor their performance,

and interpret the outcomes of their efforts. In this brief overview, we focus on three central characteristics of SRL; awareness of thinking, use of strategies, and sustained motivation.

Awareness of thinking. Part of becoming self-regulated involves awareness of effective thinking and analyses of one's own thinking habits. This is metacognition, or thinking about thinking, that Flavell (1978) and Brown (1978) first described. They showed that children from 5-16 years of age become increasingly aware of their own personal knowledge states, the characteristics of tasks that influence learning, and their own strategies for monitoring learning. Paris and Winograd (1990) summarized these aspects of metacognition as children's developing competencies for self-appraisal and self-management and discussed how these aspects of knowledge can help direct students' efforts as they learn. We tried to emphasize that the educational goal was not simply to make children think about their own thinking but, instead, to use metacognitive knowledge to guide the plans they make, the strategies they select, and the interpretations of their performance so that awareness leads to effective problem-solving. Our approach is consistent with Bandura (1986) who emphasized that self-regulation involves three interrelated processes; self-observation, self-evaluation, and self-reaction. Understanding these processes and using them deliberately is the metacognitive part of SRL.

Use of strategies. A second part of SRL involves a person's growing repertoire of strategies—for learning, studying, controlling emotions, pursuing goals, and so forth. However, we want to emphasize that our concern is with "being strategic" rather than "having" a strategy. It is one thing to know what a strategy is and quite a different thing to be inclined to use, to modify it as task conditions change, and to be able to discuss it and teach it. There are three important metacognitive aspects of strategies, often referred to as declarative knowledge (what the strategy is), procedural knowledge (how the strategy operates), and conditional knowledge (when and why a strategy should be applied) (Paris, Lipson, & Wixson, 1983). Knowing these characteristics of strategies can help students to discriminate productive from counterproductive tactics and then to apply appropriate strategies. When students are strategic, they consider options before choosing tactics to solve problems and then they invest effort in using the strategy. These choices embody SRL because they are the result of cognitive analyses of alternative routes to problem-solving.

Sustained motivation. The third aspect of SRL is motivation because learning requires effort and choices. Paris and Cross (1983) argued that ordinary learning fuses skill and will together in self-directed actions. SRL involves motivational decisions about the goal of an activity, the perceived difficulty and value of the task, the self-perceptions of the learner's ability to accomplish the task, and the potential benefit of success or liability of failure. Awareness and reflection can lead to a variety of actions depending on the motivation of the person. Researchers and educators have characterized SRL as a positive set of attitudes, strategies, and motivations for enhancing thoughtful engagement with tasks but students can also be self-directed to avoid learning or to minimize challenges. When students act to avoid failure instead of pursue success, attribute their performance to external or uncontrollable forces, use self-handicapping strategies, or set inappropriate goals, they are undermining their own learning. These behaviors are self-regulated

but may lead to diminished effort, task avoidance, and other actions that decrease engagement and learning. Learned helplessness, apathy, and defiance may also be counterproductive motivational responses to learning that can be overcome with better understanding of SRL. In our view, teachers need to understand students' motivation in order to understand how they learn, what tasks they choose, and why they may display persistence and effort or, conversely, avoidance and apathy. Self-regulation thus implies "personalized cognition and motivation" (Hickey, 1997) that exemplifies behaviors that may or may not be consistent with the teacher's agenda for learning. Because teachers need to be diagnostic about their students' learning styles and orientations, it is helpful to analyze students' awareness, use of strategies, and their motivation.

It is important to note that our view of self-regulated learning does not conflict with Borko and Putnam's view of cognition as situated, social, and distributed. They argue, and we agree, that to understand knowledge and learning, we must better understand the importance of contexts, social relationships, collaboration, and cooperation. Self-regulated learning does not mean that knowledge and learning exists solely in the mind of an individual. Rather, self-regulated learning recognizes that individuals have some control over their own learning, across contexts, across relationships, and across situations. We think that teachers who use a psychological lens to analyze students' strategies, motivation, and attitudes gain deeper understanding about students' behavior in the classroom which, in turn, allows them to design better instruction that can make learning more meaningful for them.

Why is Self-Regulation Important for Teachers?

Understanding the notion of self-regulation is important for teachers because teaching requires problem-solving and invention. Teachers face problems and challenges that are complex and rarely straightforward. As Schon (1987) points out, teaching teachers facts and rigid decision-making models is less effective than nurturing within teachers the capacity and skills to deal with the difficult problems of the real world. It is ironic that teachers are often taught with pedagogical methods that are contrary to the principles that they are being taught, such as direct instruction on problem-based learning or cooperative learning. Corno and Randi (1997) advocate that teachers should be given the same contexts, challenges, and choices that are beneficial for students and we agree wholeheartedly. They describe a model of professional development called "collaborative innovation" in which teachers work together to adapt, invent, evaluate, discuss, and revise instruction that fits their own classrooms and contexts, including such factors as students, time, buildings, resources, accountability pressures, and parents. In our view, collaborative innovation provides opportunities for teachers to become self-regulated, strategic, and motivated themselves as they invent their methods of instructing and assessing students which mimic the processes of collaborative innovation that they want their students to discover and create. It is a professional development model of the co-construction of meaningful experiences.

One of the most well-known approaches to providing teachers with both capacity and skills to be innovative is the work on reflective practice (e.g., Dewey, 1933; Liston & Zeichner, 1987;

Schon, 1983; 1987; 1991). Although definitions of reflective practice vary, in general, it refers to the teacher's ability to engage in active, persistent analysis of his or her beliefs and knowledge and the consequences that follow from those beliefs and knowledge. Ross (1990), for example, defined reflection as a way of thinking about educational matters that involves making rational choices and assuming responsibility for those choices. Ross (1990, p. 99) goes on to say that the elements of reflective practice include:

- recognizing educational dilemmas;
- responding to a dilemma by recognizing both the similarities to other situations and the unique qualities of the particular situation;
- framing and reframing the dilemma;
- experimenting with the dilemma to discover the implications of various solutions;
- examining the intended and unintended consequences of an implemented solution and evaluating it by determining whether the consequences are desirable.

Ross's definition incorporates the earlier work of Dewey (1933), Schon (1983), and Liston and Zeichner (1987) by emphasizing the importance of requisite attitudes, such as introspection, open-mindedness, and a willingness to accept responsibility, and requisite attributes, such as teachers' values and moral structure. These are part of teachers' implicit pedagogical theories that are manifested in their practices. Clearly, teachers' attitudes, attributes, and understandings will influence the kinds of student difficulties that will be recognized, how those difficulties will be interpreted and diagnosed, and what judgments are made about the desirability of various solutions.

Schon (1991) poses several questions about reflective practice that are important for teachers to consider:

1. What is it appropriate to reflect on?
2. What is an appropriate way of observing and reflecting on practice?
3. When we have take the reflective turn, what constitutes appropriate rigor?
4. What does the reflective turn imply for researchers' stance toward the educational enterprise—the subjects, the research activity, and researchers themselves?

These are key questions with complex answers. We believe that the conceptual framework of SRL provides one important perspective useful in addressing these four questions. In particular, we feel that understanding the notion of SRL enhances a teachers' ability to be reflective because SRL provides additional insights into the issues of teaching and learning, particularly those that

arise when teachers are faced with the challenge of connecting their teaching and the students' learning to the real world. Knowing more about their own thinking, developing effective strategies, and sustaining their own motivation will be crucial for teachers interested in making schooling more relevant to the outside world.

In addition, by combining the notions of contextual teaching and SRL, teachers gain a deeper understanding of the learning experiences that face their students. Teachers have a better sense of what is entailed in those experiences, what obstacles need to be overcome, and what teaching or learning strategies will be called into play. For example, Wade (this volume) argues that much of the value in service learning comes from the changes in students' abilities to question their own thinking, assumptions, and motivations. One of the driving questions about service learning is how to set up experiences in communities that encourage students to become more aware of their own understanding of and involvement in meaningful civic participation.

Finally, the more that teachers understand about their own thinking, the better they can model for students. Understanding self-regulation can help teachers make thinking public and visible. Thinking—strategic, independent, and inquisitive—then becomes a topic of classroom discussion and an explicit goal of education. Understanding the nature of self-regulation and how it is nurtured opens up a world of possible roles and relationships between teachers and students. That is why metaphors of teaching as coaching and mentoring are popular today; they emphasize how teachers design and scaffold experiences that lead students to emulate the wisdom of teachers.

Turning Principles into Practice

Our aim of focusing on SRL in preparing teachers to use contextual teaching is to help new teachers better understand themselves as thinkers so they can impart a metacognitive curriculum to students that is thought-provoking and stimulating. In this section, we focus on some of the principles that describe how teachers can become engaged in SRL and, correspondingly, what they can do to promote children's self-regulation. We offer the following list as guidelines for enhancing self-regulation for both teachers and students. Each is explained and illustrated as an example of turning theory into practice.

1. Self-appraisal leads to a deeper understanding of learning.

One general aspect of metacognition is the periodic appraisal of one's thinking. It is useful for teachers and students alike because it is reflection on the dynamics of teaching and learning, the core of education, and a first step to changing or revising one's approach. Here are some ways that self-appraisal enhances learning.

A. Analyzing personal styles and strategies for learning, and comparing them with others, increases awareness of different ways of learning. Teachers can assess their own learning strategies in college by examining the processes they use to write papers, the tactics they use to search for information in the library or on the Internet, or their methods of studying for tests.

Each of these activities are similar to the tasks they will present to children so they need to become aware of their own learning strategies and then compare them to other options. For example, teachers may discover that some people use notes or outlines before writing but others do not; some may revise 20 times while others revise once; some may ask for friends to read early drafts but others are reluctant to share their writing. Teachers need to know why adults choose particular methods for writing papers so that they can create situations in which their students discover the same range of styles. Teachers also need to become aware that learning strategies are often unexamined, often superficial or easy, and often difficult to change. Unless they go through the process of explaining, discussing, and justifying their own strategies, they may not understand how children can create or adopt poor learning strategies. Moreover, until one discusses why strategies are chosen and if someone would give up their strategy, they may not realize how entrenched people can be with their prior habits.

B. Evaluating what you know and what you do not know, as well as discerning your personal depth of understanding about key points, promotes efficient effort allocation. Perhaps the most surprising finding from early metacognitive research was that children are often unaware of what they do not know (Markman, 1981) and unable to distinguish important from unimportant information (Brown & Baker, 1983). Either they fail to reflect on what they do not understand or mistakenly assume that things make sense when they do not. This is exactly why periodic self-appraisal is useful. Teachers may fail to discern their own understanding also. Sometimes they follow a teachers' manual or prescribed lesson plan so carefully that they fail to ask if it makes sense to themselves, if all the information is necessary to teach, or if it could be presented in a more sensible sequence.

How can teachers learn to judge their own knowledge states in a contextualized manner? One possibility is to have them evaluate a lesson that they are preparing to teach to identify the important and secondary information. This can be done through highlighting or summarizing in a way that can be used directly with students also. Another method is to identify aspects of the lesson that may be confusing to them so that they do not provide superficial or erroneous information to students. Another method is to ask questions of other teachers about their lesson plans to prompt them to assess their own level of understanding and to provide warrants for their teaching.

C. Periodic self-assessment of learning processes and outcomes is a useful habit to develop because it promotes monitoring of progress, stimulates repair strategies, and promotes feelings of self-efficacy. Research on children's reading has shown that they rarely stop as they read a passage to determine if it makes sense, if their rate is appropriate, or if they need to reread (e.g. Winograd & Paris, 1988). Instead, they read start to finish and then are perplexed if they cannot answer the teachers' questions. When children fail to monitor their comprehension, they may erroneously attribute poor performance to their low ability rather than lack of strategic reading and they may feel ashamed of their reading instead of proud. Adults can exhibit similar behavior. For example, college students who write a single draft of a paper because they procrastinated until the last minute and then feel relieved simply that it was done are exhibiting poor strategies,

failure to plan and monitor, and little sense of accomplishment or efficacy with the result. What can be done?

Teachers can model comprehension monitoring with each other during joint reading. For example, using the reciprocal teaching technique developed by Palincsar and Brown (1984), teachers can take turns as the "student" reading or the "teacher" asking questions. This demonstrates the value of periodic monitoring for teachers in a way that is directly replicable in the classroom. Another contextualized strategy is to review progress on reports and projects at the beginning, middle, and end of the activity so that the learning strategies are reviewed and revised if necessary during the construction of the activity. At the end, teachers should discuss their attributions for success and take pride in their use of strategies.

2. Self-management of thinking, effort, and affect promotes flexible approaches to problem-solving that are adaptive, persistent, self-controlled, strategic, and goal-oriented.

SRL cannot be reduced to a list of steps to follow nor a menu of options because the construct denotes dynamic actions of learners engaged in complex problem-solving. Therefore, management of resources, including time and collaboration with others, must be negotiated and renegotiated with management of one's available strategies, motivation, and affect. Self-regulated learners do not simply follow a plan of action; they adapt to changing conditions and know what to do when they encounter problems. It is the flexible responses to unforeseen circumstances that typifies self-regulation and it is important to note that self-regulated learners do not lose sight of their goals or lose positive perceptions of themselves when things do not unfold as planned.

A. Setting appropriate goals that are attainable yet challenging are most effective when chosen by the individual and when they embody a mastery orientation rather than a performance goal.
When goals are set by others, behavior is compliant or obedient rather than self-directed. However, setting goals is difficult for children and adults are often unaware of the problems. For example, children often set goals such as "I will work harder" or "I will read more books" but these are performance goals that do not emphasize conceptual understanding and deep learning. When goal setting activities promote performance goals instead of mastery orientations, SRL is actually undermined (Anderman & Maehr, 1994). A further problem encountered by children is that they often choose unattainable or distant goals such as "I'll be the best reader in class" or "I'll get all A's on my report card" that are forgotten, not checked, or stated to appear virtuous rather than a realistic guide or standard to attain.

Teachers can understand the difficulties encountered in setting goals when they engage in the process themselves. For example, at the beginning of a course, the instructor can ask teachers to list their goals for the course and then discuss them in small groups. This exercise can be used to point out differences between proximal vs. distal goals, attainable vs. unattainable goals, and performance vs. mastery goals. Furthermore, the conversations can consider when goals are made as guides for the student as opposed to high aspirations intended to impress or please others. This discussion should contrast deep and shallow approaches to goal-setting and demonstrate the value in mastery goals set at a challenging standard.

B. Managing time and resources through effective planning and monitoring is essential to setting priorities, overcoming frustration, and persisting to task completion. SRL requires abundant practice for children to become proficient. Thus, teachers need to provide practice making choices and establishing priorities. Some teachers worry that children will make poor choices if given too much freedom but clever teachers know how to organize the environment so that all choices are acceptable. For example, many teachers allow children to select their own books or choose their own project topics or design extension activities for language arts, science, or math but thoughtful teachers know how to limit the choices to a prescribed set of books, topics, or activities. In a similar fashion, children need to practice setting priorities for their own work during the day and week. Teachers who encourage SRL often challenge students to check the available time and assignments so they can choose their work wisely. Finally, planning a schedule for homework and projects gives children practice organizing their own schedules. If this is first introduced during middle school, students often have trouble using their planners but if they have practiced planning their school activities previously, then they use plans effectively.

Teachers need to reflect on the ways that they make and follow plans, how they set priorities, and how they persist at tasks despite distractions if they are to teach children to do likewise. Corno (1993) refers to these tactics as "volitional strategies" because teachers and children alike need to have action-based strategies that connect intended plans with desired goals. Teachers' management strategies are seen daily by children and if teachers are disorganized, it encourages children to be disorganized too. Teachers can model good planning through the use of "tools" such as day planners, monthly reminders, wall calendars, and lists and "processes" such as dealing with plans which go awry. The latter might be illustrated by teachers who are confronted with competing demands and must make priorities and choices or who resist acting angrily to frustration and failure but instead deal constructively with it and make the best of the situation.

C. Reviewing one's own learning, revising the approach, or even starting anew, may indicate self-monitoring and a personal commitment to high standards of performance. Failure is an obstacle to SRL when learning stops and low ability is the perceived reason for failure. John Holt's classic book, entitled *How Children Fail* detailed many ways that children close down their thinking and withdraw from teachers and learning.

But failure is defined by students and teachers within classrooms in different ways and Clifford (1991) suggests that we teach students to think of "constructive failure". In this approach, everyone fails frequently but the stigma is removed when students realize that it is the response to failure, not failure itself, that is important. The self-regulated learner analyzes reasons why learning did not occur as planned and then revises the approach to circumvent the problem. This illustrates both flexibility and persistence of SRL, but it also signals high personal standards and a mastery orientation. When the task is completed or an obstacle encountered (e.g., computer disk crashes), the self-regulated learner is willing and able to start over with a better plan.

Teachers need to understand how different students react to failure, how they interpret failure, and why they are willing or not to start over because it is not just "high" or "low" motivation at issue here. Feelings of efficacy and positive expectations can lead to examine possible causes for

failure, to invent new approaches, and to persist until the goal is reached. Teachers can empathize with students better if they have experienced failure so they need to participate in exercises in which some people perform poorly and must explain their performance and what they will do differently next time. These activities prevent withdrawal and promote seeking alternative solutions. They also show that failure is common and not necessarily an indication of low personal ability. Practice, experience, and modeling by teachers can promote self-management of a wide range of SRL.

3. Self-regulation can be taught in diverse ways.

One of the underlying assumptions of this chapter is that SRL can be taught to both children and adults. This does not mean it is necessary to teach everyone nor necessary to teach the same things to those who are taught. Because SRL is flexible and adaptive, different kinds of strategies and motivation might be emphasized for different learners. Just as teaching begins with the learner, not the curriculum, SRL begins with the learner and not a list of tactics. We think that wise teachers adapt their methods of instruction to the learner but that all good teachers include components of SRL in what they teach and expect of their students.

A. Self-regulation can be taught with explicit instruction, directed reflection, and metacognitive discussions. Cognitive research has shown that expertise can develop in many ways and explicit instruction is not always necessary. However, many children do not gain metacognitive insights or use SRL effectively without direct instruction and it seems plausible that many teachers can increase their own metacognitive understanding through explicit instruction. The most direct method of making new teachers aware of SRL is to incorporate it in the curriculum as a topic of study. Teacher education courses in educational psychology can present background information on research and theory underpinning SRL. Teachers can use information on SRL to create thoughtful activities for students in science, math, and language arts. The key here is to identify the metacognitive understanding and regulating strategies that are desired and expected of students at each grade level and then to find ways to engage students in thinking about their own learning periodically.

For example, Du Bois and Staley (1997) describe an educational psychology course designed to help pre-service teachers understand SRL and incorporate it into their teaching. The course provides explicit information about four SRL topics, metacognition, cognitive strategies, academic motivation, and volition so that students study the research and theory that provides the foundation for SRL. The course includes a five-phase model of self-change (Prochaska, Di Clemente, & Norcross, 1992) that helps students to become aware of SRL tactics and eventually to implement and sustain them. The five phases are; precontemplation, contemplation, preparation, action, and maintenance, and they embody the same kinds of emerging awareness and control that we have described as metacognitive self-appraisal and self-management. The course provides opportunities for students to be reflective through journals, strategy analysis, and group discussions. Moreover, the instructors teach "strategy orchestration" through "contextualization" which helps students connect motivation to strategy use through modeling,

guided peer questioning, and self-evaluation, all processes that are similar to those we have described throughout this chapter. Teachers who engage in these kinds of activities in teacher education classes are more likely to understand SRL, perceive the value of SRL, and teach SRL to their students.

B. Self-regulation can be promoted indirectly by modeling and by activities that entail reflective analyses of learning. SRL can be taught indirectly with classroom activities, tools to evoke reflection and metacognitive understanding. One excellent method is the use of journals because they can be used with students of any age. Prospective teachers who use journals in classes learn to distinguish superficial entries and responses from analytic entries and responsive comments so they are less likely to "do journals" as an activity and more likely to use journal writing as an avenue for self-exploration, self-discovery, and self-disclosure. A second tool that translates easily from teachers to students is conferences. Conferences can be focused on cooperative projects, report cards and grades, planning and brainstorming, and other classroom events but in all the endeavors, the focus of the conference can include analyses of thinking, learning, and teaching.

Paris and Ayres (1994) interviewed teachers as they implemented literacy portfolios in their elementary classrooms and found that teachers reflected on the usefulness of the portfolios throughout the year. They gauged children's reactions to the organization and management of the portfolios, questioned what work samples to include, and made adjustments to their classroom portfolios to insure that children used them appropriately. Not only did teachers model reflection for students but, conversely, children provoked teachers to reflect on their instruction. Teachers who listened to children discuss their journals, progress, and learning were stimulated to reflect on the effectiveness of their portfolios and change them as needed.

C. Self-regulation can be promoted by assessing, charting, and discussing evidence of personal growth. Assessments of growth are closely aligned with journals and conferences because they are all tools for promoting reflection on progress and learning. SRL can be promoted through record keeping of goals met, grades received, and progress made in behavior management and learning. Teachers who use these records will understand how periodic self-appraisal can lead to feelings of pride or to renewed efforts. This simple technique is used often by people who monitor their diets, exercise, expenditures, and so forth and it can easily be extended to academic performance.

Portfolios may be the best example of an assessment tool that promotes SRL. Teacher education courses need to use these more frequently and in more conceptually driven ways so that prospective teachers understand how they promote students' reflections, not just collections. Ideally, the portfolios would span more than one course and one semester so that teachers can identify the changes during their professional preparation.

4. Self-regulation is woven into the narrative experiences and the identity of each individual.

Lave and Wegner (1994) discuss how learning is situated in domains of expertise and social interactions that they label "legitimate peripheral participation" (LPP). One of their central points is that learning is part of a person's narrative story, both a cause and consequence of their identity. They provide examples of tailors, midwives, and recovered alcoholics who learn the skills of their group, attain the identity of the group, tell their own "war stories" like the group, and regulate their own behavior according to the identity of the group. In this view, SRL is shaped by the identity of the group one belongs to or aspires to join. What is learned depends on the group identity but how it is learned, according to Lave and Wegner, is similar across people and groups because it hinges on participation through apprenticeship that gradually moves to full membership.

A. How individuals choose to appraise and monitor their own behavior is usually consistent with their preferred or desired identity. Children become students when they move into formal schooling but throughout their careers in education, they gain other identities, especially from age 12 on. These identities are sometimes evident in labels such as "geeks", "brainiacs", "burnouts", or "gangstas" and sometimes they are more covert, evident only by participation in proscribed activities of the group whether that is consistent with teachers' educational goals or not. What this means is that students use SRL for different ends, depending on their identities. If they believe that getting good grades is inappropriate for their group, they may eschew effective SRL techniques such as doing homework planfully. If their identity is consistent with a college-bound or intellectually curious person, then they may engage in positive aspects of SRL appropriately.

What does this mean for teachers? Too often teachers are unprepared to work with students who have backgrounds substantially different from their own. They need to consider how students' identities influence the likelihood that they will be responsive to teaching about SRL. For example, teachers who are sensitive to multicultural values and non-academically oriented families may understand why some students actively avoid deep engagement in school while others embrace it. Role-playing and frank discussions with ethnically and socially diverse peers may all enhance teachers' understanding of students who have identities that are different from their own. These experiences will help teachers understand how their peers as well as their students might resist traditional learning strategies and motivational appeals but might work diligently for other types of SRL that are consistent with their identities, groups, and aspirations.

B. Gaining an autobiographical perspective on education and learning provides a narrative framework that deepens personal awareness of self-regulation. Throughout this chapter we advocate teachers reflecting on their own learning and teaching experiences in order to achieve insight into their thinking and pedagogy. One excellent method for teachers to use is to create an educational autobiography in which they trace the influences on their education. This would include identifying family influences, favorite teachers, "turning point" experiences, as well as personal recollections of special aptitudes, choices of majors and careers, and identification of preferred learning and teaching styles. The purpose of the educational autobiography is to help

prospective teachers understand their own longitudinal development so they can use similar exercises with their own students to build self-awareness.

C. Participation in a reflective community enhances the frequency and depth of examination of one's self-regulation habits. Reflection is not an isolated activity of introspection followed by brilliant insights. Indeed, reflection may be redundant and noninsightful on many occasions. This is why repeated reconsideration of thinking and learning is necessary as conditions, knowledge, and experience change the ways we interpret our mental lives. Other people can provide valuable guidance for reflection because they stimulate us to see thinking from new perspectives and in new ways. This is why collaboration in a community of scholars is so vital to children's intellectual development and teachers' professional development (Brown & Campione, 1990).

How can teachers participate in collaborative reflection? One method is to review videotapes of teaching together. Two teachers may videotape each other and then talk about what they were trying to do and whether it was effective or not. Some of the discussion can revolve around issues of metacognition and SRL. What techniques did teachers build into the lesson plan? What did they model? How did they encourage students to think about thinking and have metacognitive conversations while simultaneously covering the curriculum material? Peer conferences about teaching that focus on SRL can be illuminating about how to create that focus in daily activities, how to elicit student conversations, and how to talk about it with another professional teacher.

A second method of collaborative reflection is revealed in the internship programs established in teacher education programs in which master or mentor teachers help beginning teachers reflect on their instructional content and pedagogical styles. Mentors provide nurturance and guidance for new teachers by noting and comparing their professional development with others, sharing "war stories" and personal narratives, reassuring them that the problems they encounter can be solved, supporting them with motivational encouragement, and promoting their professional identities as teachers. Mentors can provide "inside" or expert advice about self-regulating strategies that they have discovered and used so that their practices are passed on as a legacy of proven SRL tactics for teachers and students. It is the participation with peers that builds a professional identity that, in turn, motivates new teachers to adopt effective SRL habits.

Self-Regulated Learning, Contextual Teaching, and Teacher Preparation: An Example From the APS/UNM Partnership

In this section of the paper, we will describe one of the teacher preparation programs at the University of New Mexico that is built on the understanding that a partnership between the university and the public school provides a more meaningful context for teacher preparation and development than do more traditional models of teacher preparation. In addition, this program emphasizes the importance of social relationships in learning to become a teacher. Finally, this program focuses very heavily on helping the teachers become more aware of their own learning so that they can better help their students succeed. We will start with a description of the context. Then we will focus on some of the instructional strategies designed to help teachers focus on their own learning.

The Context. The Albuquerque Public Schools, the Albuquerque Federation of Teachers, and the University of New Mexico have developed a partnership that is aimed at developing a system of recruiting, preparing, and supporting teachers throughout their careers. The Partnership is a collaborative effort that provides systematic opportunities for university faculty to work with classroom teachers, counselors, and administrators in the preparation and support of teachers. The Partnership includes programs that focus on the recruitment of diverse groups (including educational assistants) into teacher education; mentoring pre-service teachers in a variety of programs including Professional Development Schools; providing induction support to new teachers; and developing networks and support for advanced professional development. In addition, the Partnership sponsors initiatives in bilingual education, literacy, counseling, and educational technology.

Instructional Strategies. For the purpose of this paper, we will focus on the work of the student teachers (referred to as novice teachers) in the Partnership's Professional Development Schools (PDS) which are located at two school sites in Albuquerque. The teacher-preparation curriculum is organized around four critical questions:

1. Who am I as a teacher?
2. Who are the children I am teaching?
3. What comprises the school community?
4. How do I connect my emerging understanding of self, children, and community to content understandings?

During their year-long involvement in the PDS program, novice teachers engage in a number of projects aimed at exploring these four critical questions. The projects most related to our topics of SRL and contextual teaching include:

- A Teaching Autobiography which helps the novice teacher to understand their assumptions about teaching and learning and to clarify the values and beliefs they bring to the classroom.
- A Philosophy of Teaching aimed at capturing the novice teachers' emerging ideas about teaching and learning as well as helping them to articulate the rationale behind their instructional practices.
- A Reflective Journal which provides a place where the novice teachers and their mentors can exchange their ideas about teaching in a safe and thoughtful way.
- A Community Study in which novice teachers develop a systematic understanding of what it is like to be a child in the school and what it means to connect the community context to children's learning.

- Child Study/Kid Watching Project which is a collaborative effort between the mentor and the novice teacher. The novice teacher observes and documents two children as they develop over the year.
- Teaming to Teach requires novice teachers to work collaboratively with each other in order to gain a deeper understanding of what it takes to transform content for different learners, to use a variety of curricula, and to be part of a team.
- Community Service connects the novice teachers to the authentic needs of the school, to small groups of students, and to the broader community.

Consider for a moment, how these instructional activities can enhance the novice teacher's ability to engage in the five principles of self-regulated learning:

1. Self-appraisal leads to a deeper understanding of learning.
2. Self-management of thinking, effort, and affect promotes flexible approaches to problem-solving that are adaptive, persistent, self-controlled, strategic, and goal-oriented.
3. Self-regulation can be taught in diverse ways.
4. Self-regulation is woven into the narrative experiences and the identity of each individual.

The novice teachers have systematic opportunities to engage in self-appraisal by thinking about themselves as teachers, about their approach to teaching, and the experiences they are having as they go through the PDS program. In addition, there are structured opportunities to discuss these self-reflections with others in their cohort. Projects like the reflective journal, the community study, the child study, and teaming to teach provide the novice teachers with opportunities and structure aimed at helping them develop more flexible, strategic, and effective approaches to problem-solving. Because these instructional tasks take place over the entire length of the PDS program, the novice teachers are able to see how their knowledge and thinking changes over time. The variety of instructional tasks helps ensure a diversity of opportunities for self-regulation and reflection. Finally, the fact that novice teachers are involved in a reflective community that encompasses the community, the schools, and the cohort, allows them to use the power of social relationships to strengthen their own habits of self-reflection.

The Professional Development Schools in the APS/UNM Partnership have been evaluated in a number of ways including how well the new teachers know their students, how well they know their subject matter, how they work with colleagues and constituencies, and how they participate in the working of a good school. The results indicate that the new teachers perform well on these objectives. In addition, the feedback from hiring principals is very positive, particularly about the students' understanding of themselves as teachers, and their ability to provide clear and articulate rationales for their curricular choices and strategies. Of course, the evaluations also indicate that there are areas that need to be strengthened including the need for students to develop deeper

understandings of child development, educational foundations, multicultural education, and educational technology.

In summary, the PDS program shows how instructional strategies that enhance SRL can be incorporated into teacher preparation programs. But it is important to note that such strategies are only a start. The need for more extensive strategies in teacher preparation programs that are more contextualized along the lines suggested by other chapters in this volume is clear. We will focus on some of the obstacles that we must address if we are to make real progress in helping teachers connect students to authentic learning experiences beyond school.

Obstacles and Concerns

Although it is exciting to think about ways that self-regulation can be embedded in teacher preparation programs, it is important to be realistic about the challenges that must be addressed if our vision of teachers who are adept at SRL is to be turn into widespread practice in real classrooms. Here are some of our concerns.

The first major obstacle is the uneven and often inadequate preparation that teachers receive. The National Commission on Teaching and America's Future (1996, 1997), for example, states that only 500 of the nation's 1200 teacher preparation programs meet common professional standards. In addition, NCTAF estimates that more than 12% of all newly hired teachers enter classrooms without any preparation at all, and another 15% enter the classroom without fully meeting state standards. Uneven or inadequate preparation leads to a host of problems, of course, but one of the worst from our perspective is that poorly prepared teachers are more likely to engage in perfunctory curriculum delivery rather than engage in thoughtful self-regulation.

A second problem, related to the first, is the difficulty of strengthening those existing teacher preparation programs that are adequate. Too many teacher education programs are locked into rigid frameworks of individual courses with minimal overlap and integration. They often have limits on the number of credit hours that students can take before graduation or certification. Professors from different disciplines feel that students never get enough preparation in their particular areas, and in too many cases, they are correct. Developing a teacher preparation curriculum that expects teacher candidates to engage in SRL and provides real support and opportunities for such thoughtful activities is no small feat. We would dare to say that, in most institutions across the country, teacher educators are struggling to manage large numbers of students on tight budgets with short timelines. Expecting such programs to become more concerned about nurturing the intellectual growth of individual students may not be realistic until and unless fundamental changes are implemented in the ways that teacher preparation programs are organized and supported.

The situation in teacher preparation is likely to get worse as the nation experiences a predicted increase in the demand for new teachers. According to various estimates, student enrollments will grow to 54.3 million students by the year 2007, up from 50 million students in 1995. Combine this increase in the number of students with the fact that large numbers of current teachers are

nearing retirement, and one can see why experts are predicting that the nation will need to hire at least two million new teachers in the next ten years. What this means is that the number of poorly prepared teachers or unprepared teachers is likely to increase unless teacher preparation programs are changed in significant ways.

Strengthening the way that teachers are prepared is crucial but it is only part of the solution. The NCTAF (1996, 1997), for example, argues that schools must be reorganized for student and teacher success. The NCTAF offers a number of recommendations in this regard but one is particularly relevant to our efforts at promoting SRL. The NCAFT recommends that schools rethink schedules and staffing so that students have more time for in-depth learning and teachers have more time to work with and learn from one another. This recommendation is crucial, given that most elementary teachers have only 8.3 minutes of preparatory time for every hour they teach and high school teachers have just 13 minutes of preparation time for every hour they teach.

Our final concern has to do with the nature of the curriculum that teachers are expected to teach and that students are expected to learn. If we really want teachers and students to engage in SRL, then classroom curriculum must be organized in ways that support and value autonomous inquiry and strategic problem-solving. The good news is that the right language often shows up in many of the national and state efforts to develop learning standards and goals. For example, the Performance Standards developed by the New Standards project focus on the importance of helping students learn problem solving strategies and self-management techniques. The National Educational Goals Panel (www.negp.gov), states, as part of Goal 3: Student Achievement and Citizenship, that "... every school in America will ensure that all students will learn to use their minds well, so that they may be prepared for responsible citizenship, further learning, and productive employment in our Nation's modern economy." But the bad news is that our paltry support of innovative curriculum development and our reluctance to really change our high-stakes assessment systems means that students and teachers will continue to focus on low-level kinds of learning. We face the fundamental question of whether we can really change curriculum and assessment systems in ways that support thoughtful teachers and students who can deal with complexity or whether those systems will continue to foster the illusion that life, like the tests we give, has only one correct answer.

The Future of Self-Regulation, Contextual Teaching, and Teacher Preparation

We have argued throughout this chapter that teachers need to become aware of SRL, to become models of effective strategies, to analyze their own students' learning, and to implement classroom activities that contextualize learning. As authors, we can do no less than enthusiastically practice what we preach. Here, then, are some recommendations for helping teachers and students become more self-regulated learners.

- We strongly endorse the recommendations of the National Commission on Teaching and America's Future (1996; 1997), particularly those that deal with standards for teachers and students; reinventing teacher preparation and

professional development; recruiting and retaining qualified teachers; and creating schools that are organized for student and teacher success.

- Teacher preparation programs must become a higher priority for universities in general and colleges of education in particular. We have models of teacher preparation programs that provide new teachers with rich curriculum and powerful mentoring relationships but these are labor-intensive and expensive. Using these models to prepare a larger proportion of new teachers will require universities and colleges to rethink their priorities.
- Courses on pedagogy need to designed and taught that focus on teaching and learning strategies that promote SRL for both teacher and students.
- Educators need to do a better job of communicating with the public, policy-makers, and other stakeholders about the nature of teaching and learning. We need to build a solid base of support among parents, legislators, the media, the business community, and other influential citizens for the importance of teacher preparation and the profession of teaching.

We are excited about the potential inherent in current teacher education reform movements. But it is essential that we temper our enthusiasm with an appreciation of the realities of the issues that we face. Solving the pedagogical issues in teacher preparation will be easier than solving the political and economic issues. Our ability to make progress depends on our ability to think clearly about the challenges, to imagine a better world for our children, and to stand firm for those things we value.

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